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## Class Notes: BPM Research and Education

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## Modelling Processes and the Question of Impact

Eike Bernhard and Jan Recker

Over the last Columns, we have dipped into various aspects of the academic life as it surrounds the management of business processes – I have shared views on the debates between industry and academia [1], sketched out current trends in expanding BPM to new frontiers [2, 3], reviewed efforts in BPM classroom settings [4] and examined technological advances in BPM research a bit closer [5].

In this Column, I have teamed up with a colleague, Eike Bernhard, a doctoral student who is studying the impact of process modelling on organizational practices. Together, we want to shed light on an age-old question of Business Process Management: What is the value proposition of process modelling?

### The Problem

I have mentioned before how both private and public sector organizations over the last decades invested heavily in process modelling initiatives. In our work, we have talked to organizations that have actually invested millions of dollars on process modelling. One part of this investment that immediately comes to mind is the cost of the actual modelling work, that is, the costs of documenting the organization's processes or specifying the requirements of an information system for so and so many processes; but there is more. Modelling tools need to be acquired and implemented. Business Analysts or employees in similar roles typically have a need for training in the art of process modelling in general and in the use of the newly purchased tool in particular. Additional technological support is available to help organizations with storing, publishing, distributing, and maintaining models, and managing all aspects of their process model collections. Modelling conventions have to be developed to ensure consistent model design and use [6]. And of course the organizational culture has to be carefully prepared to support modelling initiatives [7].

Rightfully, the key financial sponsors of such work want to see a return on investment. Only if the corresponding value is apparent, will the organization continue to pursue modelling activities. This is making it necessary for the return on investment from process modelling to be convincing. Continuous efforts are important because Business Process Management is an ongoing, holistic management approach rather than a one-time project. Thus, the question about the ways in which an organization is impacted by process modelling and can achieve benefits from the use of process models arises.

Research in this area has demonstrated that process models can act as an instrument for sharing knowledge. They can provide a common language for different roles within the organization, most notably business and IT, as the example of system development illustrates. The use of models as visual process representations is argued to be more time-efficient than plain textual descriptions and offer a more understandable, transparent and distinct description of an organization's processes. All of this is largely known by organizations and – at least in parts – demonstrated through dedicated scientific studies. Still, until today, there has not been a comprehensive account of the various types and consequences of impacts from process modelling. Organizations still do not fully know what to expect when engaging in a modelling initiative and individuals are not always convinced that their efforts are worthwhile. This makes it hard to argue the case for such an initiative and it makes it even harder to persist with such initiatives over time, or in situations of enduring cost pressures. Some benefits have been demonstrated, but the understanding of how they are developed as well as the relationship between them is still vague. So what exactly is the impact of process modelling?

### The Different Ways Process Modelling Impacts an Organization

In our research, we try to facilitate a better understanding of what benefits flow from process modelling, and we try to help organizations in reaping as well as effectively communicating the value of process modelling. To that end, we talked to several organizations about how process modelling impacted their work.

Employees frequently noted the importance of process **understanding** when working with process models, which helps them to develop knowledge about the process and the domain (*"we would never have known until we actually mapped it"*). Especially the formal and structured display of information seems to be an important feature of process models that supports knowledge development, for example, activities that have to be executed as part of the process, hand-over points to other process participants – especially across departments, the involvement of IT-systems or details about customer interactions. This dimension of impact has been reported along a variety of modelling tasks and purposes, such as process documentation, continuous process management, process re-design or software requirements specification.

**Communication** (*"the picture told the story for us"*) was often mentioned as an important impact dimension. Employees found it considerably easier to explain process-related issues to various internal stakeholders, such as senior management (*"I [the manager] understand, it makes sense now and the pieces fall together"*) or to staff members from other organizational functions when they can utilize a process model as foundation for the discussion. Model-based communication was also utilized to induce new staff into the process team (*"once I saw it visually it made sense to [the new team member]"*), and to educate staff with customer contact.

**Coordination** amongst the process team (*"the right people are looking at it at the right time"*) was also mentioned repeatedly by users of process models. Process model use supports the coordination of activities of process participants, leading to efficient task allocation and optimization of handovers, among other effects. Models furthermore allowed for quick and accurate derivation of detailed work procedures for day-to-day use by front-line staff. In case of processes that span across intra-organizational boundaries, the existence of process models has also been observed to reduce silo thinking and frustration among different participants in the process.

Both communication and understanding ultimately add to **decision-making** capabilities related to the process (*"the model will always help me think about what will happen"*). This relates, for example to choosing between process redesign alternatives or selecting the most appropriate information system to support the modelled process. However, not all interviewees supported this view – suggesting that there must be either some user-, model-related or organizational factors that hinder the development of decision-making capabilities from the use of process models.

We also observed that users of process models were able to identify **process improvement** possibilities – for many organizations, this represents the Holy Grail of process modelling. Improvement possibilities are revealed by visualizing and gaining an understanding of issues and constraints of the as-is process (*“if it looks like spaghetti it probably is spaghetti”*). This can result in the elimination of unnecessary handoffs, changes to the order of process steps, faster execution time, or fewer mistakes. It can also facilitate standardization (*“every line of business will be doing the same”*) and risk-management. Also, alternative future states of the process can be displayed, discussed, evaluated and implemented. However, the degree to which the user is willing or able to perceive the potential to improve the process seems to depend on his goals, modelling expertise and experience.

Based on the discussed benefits, model users that realize an increase in process performance e.g., through process improvements were usually more **satisfied** with their work on a process (*“if we didn't have the process models, we would have been struggling”*). Satisfied users are in turn more likely to continue to make use of process models and increasingly rely on them in the future. (*“we would never drive the company any other way than this way now”*).

### How Can the Impacts be Combined to Realize Benefits?

What is important to understand is that the impacts of process modelling are not isolated and certainly do not automatically and necessarily follow from an engagement in process models. Rather, they are situated in a complex net of determinants and consequences. In other words, better decision-making or better process improvement capabilities are not guaranteed and do not directly follow from the modelling of some organizational process. Rather, they depend on the realization of certain benefits first, which in turn make other benefits available to be reaped. We have tried to visualize this complex net of impacts from process modelling in Figure 1.

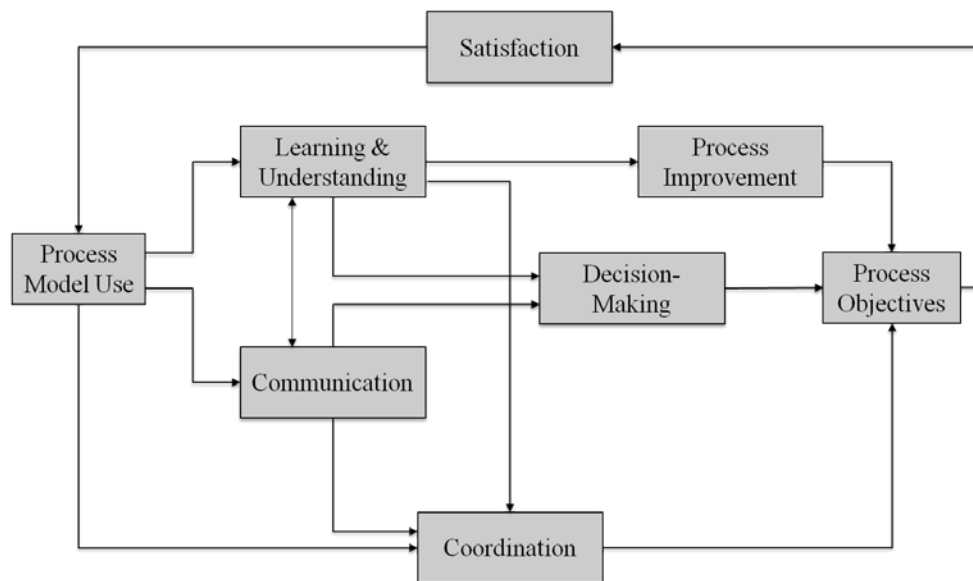


Figure 1: Impact Realization Model

First and foremost, process models foster communication among the people working with the models. This communication, in turn, leads to a better understanding of the modelled processes, which subsequently increases the chances to uncover process improvement possibilities. Naturally, an improved process will allow you to meet more of your process objectives – and possibly even improve metrics that you did not think of at the start.

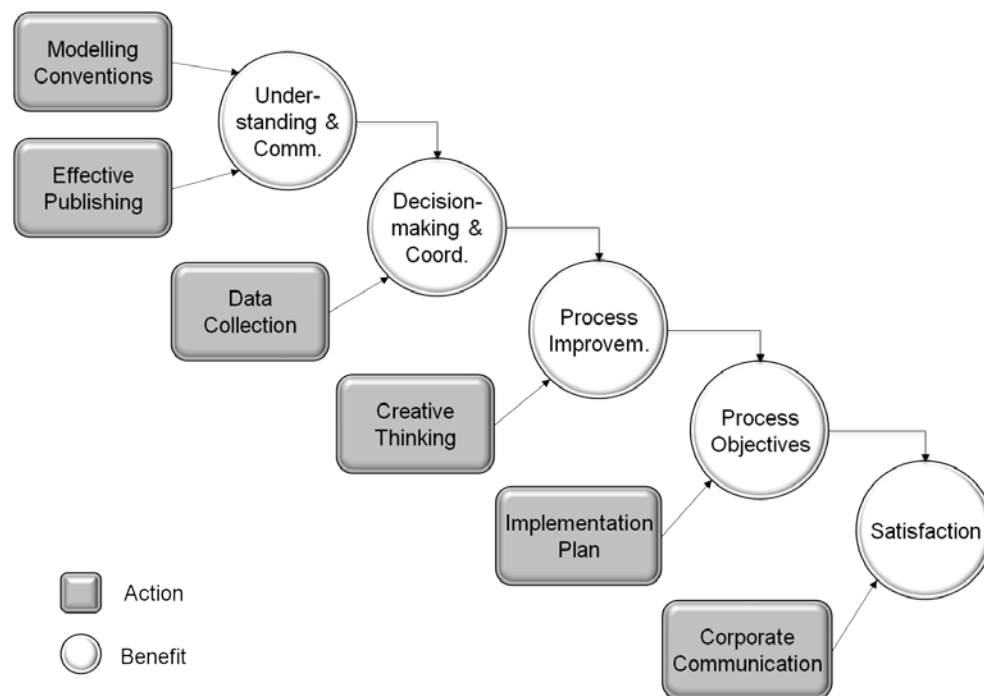
More model-based communication and process knowledge can also lead to better decision-making related to the process, such as an easier and more precise evaluation of alternatives--another benefit that will help you to meet your goals.

Process models can guide process coordination efforts, such as task allocation or activities that span intra-organizational boundaries, thus offering another way for organizations to meet and exceed their goals

What we also found that if all of the above benefits come about using process models, users will be increasingly satisfied with the process. Increased satisfaction will then lead to an increase in process model use and thus, an ongoing manifestation of the impacts from process modelling.

Now that we understand how the impacts relate to one another, a key question that remains is how organizations can be assisted to reaping these benefits.

One way of thinking about this is to identify appropriate *actions* that enhance the impact of certain *benefits*. We call these models action-benefits chains, and they look as follows:



**Figure 2: Action-Benefit Chain for Process Modelling**

What this model visualizes is that the impacts from process modelling can be increased by choosing appropriate complementary actions. For instance, effective model publishing mechanisms and appropriate modelling conventions will increase the level of understanding and learning about a process that can be gleaned from process model use. Collecting the right data to inform about decision alternatives and achieve efficient task allocation and synchronization of activities is crucial and will assist decision-making and process coordination on basis of process models. When it comes to improvements, visualizing the process is only part of the story. Creative ideas to actually change the status quo to a desired state – whatever that may be – are also required. To achieve improvements and successfully reach the objectives of the process, a change implementation plan should be established and adhered to. Finally, the success story has to be told: by making use of an effective communication strategy, the realized benefits are

communicated to the organization and the process stakeholders, in turn increasing satisfaction and motivation to continue and increase the use of process modelling.

### A Call to Share Your Opinions

At this stage, we would like to invite all readers to share with us their experiences in using process models. Did you encounter similar effects in your organization? If not, what do you think are 'roadblocks'? Is your view different from ours? What, in your opinion, leads to the development of these and potentially other impacts? What is about process models that make them valuable? We are eager to hear from you!

### Acknowledgments

In this Column we discuss ongoing research work at the Queensland University of Technology (QUT), as well as in a network of academics around the globe. We herewith appreciate and acknowledge their work, input and views. As usual, our interpretation of their work should be considered as the authors' personal views.

Please feel free to contact us with your suggestions, feedback and comments, or for a copy of articles related to the topics above.

### About the Authors

**Eike Bernhard** is a doctoral student with the Information Systems School at the Queensland University of Technology, Brisbane, Australia. His research focuses on the impact of process modelling. Specifically, the purpose of his work is to gain theory-driven, empirical insights into the impact of process modelling on the success of organizational initiatives, and the contribution of advanced tool support to increasing the value of process modelling. Eike is also involved in BPM teaching. He holds a MS in Business from the University of Muenster, Germany. You can contact Eike about his research and publications via email ([eike.bernhard@qut.edu.au](mailto:eike.bernhard@qut.edu.au)) or follow him on twitter ([http://twitter.com/eike\\_b](http://twitter.com/eike_b)).

**Jan Recker** is a Full Professor and the Woolworths Chair of Retail Innovation at the Queensland University of Technology in Brisbane, Australia. Jan's research interests focus on the use of process design in organizational practice, business transformations and organizational innovations. Jan has authored and edited several books. He also co-authored over 100 academic papers in journals and conferences and presented his research all over the globe. He holds a PhD in Information Systems from Queensland University of Technology and a MS in Information Systems from the University of Muenster, Germany. His research and publications can be accessed at <http://www.janrecker.com>. The best way to contact Jan is via email ([j.recker@qut.edu.au](mailto:j.recker@qut.edu.au)). You can subscribe to his tweets at [www.twitter.com/janrecker](http://www.twitter.com/janrecker).

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